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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of : **Confirmation No. 3694**  
Akeyuki KOMATSU et al. : Attorney Docket No. 2006\_0653A  
Serial No. 10/577,716 : Group Art Unit 2821  
Filed July 20, 2006 :

COLD-CATHODE TUBE LIGHTING  
DEVICE FOR USE IN A PLURALITY OF  
COLD-CATHODE TUBES LIT BY ONE  
LOW-IMPEDANCE POWER SOURCE

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**SUBMISSION OF ENGLISH VERSION OF INTERNATIONAL  
PRELIMINARY REPORT ON PATENTABILITY**


Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

An English language version of the International Preliminary Report on Patentability is  
submitted herewith for the Examiner's consideration.

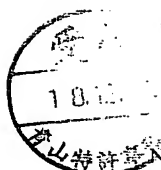
Respectfully submitted,

Akeyuki KOMATSU et al.

By:   
Michael S. Huppert  
Registration No. 40,268  
Attorney for Applicants

MSH/kjf  
Washington, D.C. 20006-1021  
Telephone (202) 721-8200  
Facsimile (202) 721-8250  
July 5, 2007

8049

**PCT**

NOTIFICATION OF TRANSMITTAL  
OF COPIES OF TRANSLATION  
OF THE INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY  
(CHAPTER I OR CHAPTER II  
OF THE PATENT COOPERATION TREATY)  
(PCT Rules 44bis.3(c) and 72.2)

From the INTERNATIONAL BUREAU

To:

HIGASHIMA, Takaharu  
Aoyama & Partners  
IMP Building, 3-7, Shiromi 1-chome  
Chuo-ku, Osaka-shi  
Osaka 540-0001  
JAPON

Date of mailing (day/month/year)

23 November 2006 (23.11.2006)

Applicant's or agent's file reference

P038916-P0

66528X

**IMPORTANT NOTIFICATION**

International application No.

PCT/JP2005/007651

International filing date (day/month/year)

21 April 2005 (21.04.2005)

Applicant

MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD. et al

**1. Transmittal of the translation to the applicant.**

The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter I).



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter II).

**2. Transmittal of the copy of the translation to the designated or elected Offices.**

The International Bureau notifies the applicant that copies of that translation have been transmitted to the following designated or elected Offices requiring such translation:

None

The following designated or elected Offices, having waived the requirement for such a transmittal at this time, will receive copies of that translation from the International Bureau only upon their request:

AE, AG, AL, AM, AP, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EA, EC, EE, EG, EP, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OA, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

**3. Reminder regarding translation into (one of) the official language(s) of the elected Office(s).**

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability (Chapter II).

It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned within the applicable time limit (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Authorized officer

Masashi Honda

Facsimile No. +41 22 338 82 70

Facsimile No. +41 22 338 82 70

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

|  |   |   |
|--|---|---|
| Applicant's or agent's file reference<br>P038916-P0  | <b>FOR FURTHER ACTION</b>   | See item 4 below  |
| International application No.<br>PCT/JP2005/007651   | International filing date ( <i>day/month/year</i> )<br>21 April 2005 (21.04.2005) | Priority date ( <i>day/month/year</i> )<br>07 May 2004 (07.05.2004) |
| International Patent Classification (8th edition unless older edition indicated)<br>See relevant information in Form PCT/ISA/237 |   |   |
| Applicant<br>MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.  |   |   |

|                                     |  |   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                                     |              |   |
|-------------------------------------|--|---|-----------|---------------------|--------------------------|------------|----------|--------------------------|-------------|--|--------------------------|------------|----------------------------|-------------------------------------|-----------|---|-------------------------------------|------------|-------------------------|--------------------------|-------------|--|-------------------------------------|--------------|---|
| 1.                                  | This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 <i>bis</i> .1(a).  |   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                                     |              |   |
| 2.                                  | This REPORT consists of a total of 7 sheets, including this cover sheet.<br><br>In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.  |   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                                     |              |   |
| 3.                                  | <p>This report contains indications relating to the following items:</p> <table style="width: 100%;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td style="width: 80%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> | <input checked="" type="checkbox"/>   | Box No. I | Basis of the report | <input type="checkbox"/> | Box No. II | Priority | <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | <input type="checkbox"/> | Box No. IV | Lack of unity of invention | <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | <input checked="" type="checkbox"/> | Box No. VI | Certain documents cited | <input type="checkbox"/> | Box No. VII | Certain defects in the international application | <input checked="" type="checkbox"/> | Box No. VIII | Certain observations on the international application |
| <input checked="" type="checkbox"/> | Box No. I  | Basis of the report   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                                     |              |   |
| <input type="checkbox"/>            | Box No. II   | Priority  |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                                     |              |   |
| <input type="checkbox"/>            | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                                     |              |   |
| <input type="checkbox"/>            | Box No. IV   | Lack of unity of invention  |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                                     |              |   |
| <input checked="" type="checkbox"/> | Box No. V  | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                                     |              |   |
| <input checked="" type="checkbox"/> | Box No. VI   | Certain documents cited   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                                     |              |   |
| <input type="checkbox"/>            | Box No. VII  | Certain defects in the international application  |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                                     |              |   |
| <input checked="" type="checkbox"/> | Box No. VIII   | Certain observations on the international application   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                                     |              |   |
| 4.                                  | The International Bureau will communicate this report to designated Offices in accordance with Rules 44 <i>bis</i> .3(c) and 93 <i>bis</i> .1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44 <i>bis</i> .2).   |   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                                     |              |   |

|  |  |
|--|--|
| <p style="text-align: center;">The International Bureau of WIPO<br/>34, chemin des Colombettes<br/>1211 Geneva 20, Switzerland</p> <p>Facsimile No. +41 22 338 82 70</p> | <p>Date of issuance of this report<br/>14 November 2006 (14.11.2006)</p> <p>Authorized officer<br/><br/><div style="text-align: right;">Masashi Honda</div></p> <p>e-mail: pt08@wipo.int</p> |
|--|--|

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

**TRANSLATION**  
**PCT**

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing  
(day/month/year)

Applicant's or agent's file reference

**P038916-P0**

**FOR FURTHER ACTION**

See paragraph 2 below

International application No.

**PCT/JP2005/007651**

International filing date (day/month/year)

**21.04.2005**

Priority date (day/month/year)

**07.05.2004**

International Patent Classification (IPC) or both national classification and IPC

Applicant

**MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.**

1. This opinion contains indications relating to the following items:

- |                                     |              |  |
|-------------------------------------|--------------|--|
| <input checked="" type="checkbox"/> | Box No. I    | Basis of the opinion   |
| <input type="checkbox"/>            | Box No. II   | Priority   |
| <input type="checkbox"/>            | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability   |
| <input type="checkbox"/>            | Box No. IV   | Lack of unity of invention   |
| <input checked="" type="checkbox"/> | Box No. V    | Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input checked="" type="checkbox"/> | Box No. VI   | Certain documents cited  |
| <input type="checkbox"/>            | Box No. VII  | Certain defects in the international application   |
| <input checked="" type="checkbox"/> | Box No. VIII | Certain observations on the international application  |

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP

Authorized officer

Facsimile No.

Telephone No.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/007651

Box No. 1      Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
☐ This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material  
☐ a sequence listing  
☐ table(s) related to the sequence listing
  - b. format of material  
☐ in written format  
☐ in computer readable form
  - c. time of filing/furnishing  
☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/JP2005/007651

**Box No. V** Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

**1. Statement**

|                               |        |             |     |
|-------------------------------|--------|-------------|-----|
| Novelty (N)                   | Claims | <u>1-16</u> | YES |
|                               | Claims | _____       | NO  |
| Inventive step (IS)           | Claims | _____       | YES |
|                               | Claims | <u>1-16</u> | NO  |
| Industrial applicability (IA) | Claims | <u>1-16</u> | YES |
|                               | Claims | _____       | NO  |

**2. Citations and explanations:**

- Document 1: JP 2002-353044 A (Minebea Co., Ltd.), 06 December 2002, paragraph 0012, Fig. 25 & EP 1265460 A2, paragraph 0016, Fig. 25 & US 2002/0176268 A1 & US 6714111 B2
- Document 2: JP 6-301034 A (Kabushiki Kaisha Ryosan), 28 October 1994, paragraphs 0032-0039, Figs. 8-13 (Family: none)
- Document 3: JP 8-122776 A (Seiko Epson Corp.), 17 May 1996, Full text, Fig. 1 (Family: none)
- Document 4: JP 8-288086 A (Hitachi, Ltd.), 01 November 1996, Full text, Figs. 1, 3 (Family: none)
- Document 5: JP 7-45375 A (Toshiba Lighting & Technology Corp.), 14 February 1995, paragraphs 0002, 0003, Fig. 6 (Family: none)
- Document 6: WO 02/078403 A1 (KONINKLIJKE PHILIPS ELECTRONICS N.V.), 03 October 2002, Fig. 3 & JP 2004-524660 A, paragraph 0010, Fig. 3 & US 2002/0135319 A1 & US 6509696 B2
- Document 7: JP 2004-119206 A (NEC Lighting Kabushiki Kaisha), 15 April 2004, paragraph 0002 (Family: none)
- Document 8: JP 8-273862 A (Masakazu USHIJIMA), 18 October 1996, Full text, all drawings & JP 3292788 B2 & US 5959412 A, Full text, all drawings
- Document 9: JP 2005-63941 A (Matsushita Electric Industrial Co., Ltd.), 10 March 2005, Full text, all drawings & US 2005/0023988 A1, Full text, all drawings

The inventions of claims 1-6, 8-12, 16 do not appear to involve an inventive step based on documents 1, 2 cited in the ISR.

Document 1 describes a cold cathode ignition device in which a balance capacitor Cb is inserted between each CFL2 and output terminal of the inverter transformer T of a closed magnetic circuit structure with a small leak impedance.

(Continued in the Supplemental Box)

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/JP2005/007651

Box No. VI      Certain documents cited

1.    Certain published documents (Rule 43bis.1 and 70.10)

| Application No.<br>Patent No. | Publication date<br>(day/month/year) | Filing date<br>(day/month/year) | Priority date (valid claim)<br>(day/month/year) |
|-------------------------------|--------------------------------------|---------------------------------|---|
| JP 2005-63941 A<br>[P, X]     | 10.03.2005                           | 24.05.2004                      | 30.07.2003                                      |
| US 2005/0023988 A1<br>[P, X]  | 03.02.2005                           | 08.07.2004                      | 30.07.2003                                      |

2.    Non-written disclosures (Rule 43bis.1 and 70.9)

| Kind of non-written disclosure | Date of non-written disclosure<br>(day/month/year) | Date of written disclosure<br>referring to non-written disclosure<br>(day/month/year) |
|--------------------------------|--|---|
|                                |  |   |

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/007651

Box No. VIII      Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

(1) Claims 1, 16 describe "a synthetic impedance of a plurality of cold cathode tubes", but the state (for example, starting operation, during stable ignition, or during quenching) of the "plurality of cold cathode tubes" in which the impedance is obtained is not clear.

Furthermore, it is not clear whether "a synthetic impedance of a plurality of cold cathode tubes" is an impedance obtained when a plurality of "cold cathode tubes" are connected in parallel or an impedance obtained when a "ballast capacitor" and a "cold cathode tube are connected in serial and a plurality of resultant circuit elements are connected in parallel.

(2) Claim 8 describes that "the surface of said substrate and the surface of said cold cathode tube are disposed at a prescribed distance from each other, this distance being determined by the temperature difference and difference in potential between the two surfaces, but how the "prescribed distance" is determined "from the temperature difference and difference in potential between the two surfaces" is not clear from the description of the claim. As a result, the range corresponding to the "prescribed distance" is not clear.



Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

Document 2 describes that one terminal of each of a plurality of fluorescent lamps 47 is mounted on a printed circuit substrate 80a having a ballast capacitor 89 mounted thereof, and applying this technology described in document 2 in the cold cathode igniter device described in document 1 would not be difficult.

Embedding a capacitance in a substrate by a lamination substrate is well-known technology, and employing the printed circuit substrate 80a described in document 2 as the lamination substrate and embedding a capacitor equivalent to the ballast capacitor 89 in the substrate would be a matter of design variation that can be easily achieved by a person skilled in the art.

The invention of claim 7 does not appear to involve an inventive step based on documents 1-3 cited in the ISR.

Document 3 describes that ballast capacitors 3, 4 are connected to electrodes at respective terminals of the fluorescent lamp 1.

The inventions of claims 13, 14 do not appear to involve an inventive step based on documents 1, 2, 4 cited in the ISR.

Document 4 describes a cold cathode discharge ignition device using a transformer having a structure in which a secondary winding 5 is wound about a split winding bobbin 1 equipped with a separator, an insulating layer 6 is provided on the bobbin 1, and a primary winding 7 is wound about the insulating layer 6. Applying the transformer described in document 4 in the inverter transformer of a cold cathode tube ignition device described in document 1 would not be difficult.

The invention of claim 15 does not appear to involve an inventive step based on documents 1, 2, 5 cited in the ISR.

Document 5 describes a discharge ignition device in which a plurality of discharge lamps 7a, 7b each having ballast capacitors Ca, Cb connected in series are connected in parallel with the output of the inverter circuit 6 having a half-bridge circuit 4.